WHAT IS CLAIMED IS:

1. An isolated stem cell sustainable in culture under glycolytic conditions and which maintains the potential to differentiate.

2. The stem cell of claim 1 which is unipotent or pluripotent.

3. The stem cell of claim 1 which is an embryonic or somatic stem cell.

4. The stem cell of claim 3 which is a pluripotent cell from a preimplantation embryo.

5. The stem cell of claim 1 which is a primordial germ cell.

6. The stem cell of claim 1 selected from the group consisting of hematopoietic, neuronal and mesenchymal stem cells.

7. An isolated stem cell which cell shows characteristic green staining with the mitochondrial marker JC-1.

8. An isolated stem cell which cell displays a low mitochondrial inner membrane potential based upon JC-1 green staining.

9. An isolated stem cell which cell displays a high mitochondrial inner membrane potential based upon JC-1 red staining.

10. A method of isolating a stem cell, comprising the steps of:
(a) isolating a blastocyst;
(b) identifying those cells which rely upon glycolysis for survival;
(c) isolating a glycolytic cell from the inner cell mass of the blastocyst; and
(d) culturing the isolated glycolytic cell to obtain an isolated stem cell.

11. The method of claim 10, wherein the cells are identified by staining with the mitochondrial marker JC-1.

12. The method of claim 10, further comprising maintaining the isolated cells on a fibroblast feeder layer to prevent differentiation.

13. A chimeric animal produced from a cell of claims 1 or 9.

14. A method of producing a chimeric animal comprising
(a) isolating a blastocyst;
(b) identifying those cells which rely upon glycolysis for survival;
(c) isolating the glycolytic cells from the inner cell mass of the blastocyst;
(d) transfecting a desired gene into the glycolytic cells;
(e) injecting the transfected cells into recipient blastocysts;
(f) implanting the transformed blastocysts into a host uterus; and
(g) nurturing the blastocysts to develop to term.

15. A method of producing glycolytic-dependent cells, comprising the steps of:
(a) culturing cells under hypoxic conditions;
(b) identifying those cells which rely upon glycolysis for survival;
(c) isolating the glycolytic cells from the culture; and
(d) culturing the isolated glycolytic cells.

16. A stem cell of claims 1 or 9 which is a mammalian stem cell.

17. A chimeric mammal produced from a stem cell of claim 16.

18. An isolated stem cell, wherein said stem cell can be identified by staining said cell with the fluorescent dye JC-1.

19. The isolated stem cell of claim 18, wherein said cell is sensitive to inhibitors of multidrug resistance (MDR) targets.

20. The isolated stem cell of claim 19, wherein said inhibitors are selected from the group consisting of verapamil, reserpine, and cyclosporine A.

21. The isolated stem cell of claim 19, wherein the multidrug resistance (MDR) target is an MDR-like dye efflux pump.

22. A method of identifying functionally distinct stem cells, comprising:
(a) staining the cells with the fluorescent dye JC-1;

(b) sorting the stained cells by fluorescence activated cell sorting (FACS);

(c) analyzing said functionally distinct stem cells by comparing their sensitivity to inhibitors of multidrug resistance (MDR) targets; and

(d) identifying a MDR-inhibitor sensitive JC-1 subpopulation of cells.

23. The MDR-inhibitor sensitive JC-1 subpopulation of claim 22, wherein said subpopulation has an increased differentiation permissiveness.

24. A method of switching embryonic stem cells between two subpopulations, comprising:

a) exposing a JC-1 green subpopulation to inhibitors of multidrug resistance genes; and

b) overexpressing recombinant multidrug resistance genes in a JC-1 red subpopulation.

25. The method of claim 24, wherein said inhibitors are selected from the group consisting of verapamil, reserpine and cyclosporine.

26. A method of changing a cell's ability to differentiate by switching the subpopulations of claim 24.

27. An embryonic stem cell which is differentiated by the method of claim 24.